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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/544,390	04/06/2000	Todd M. Hess	E005640	7545

7590 03/04/2004

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EXAMINER

THANGAVELU, KANDASAMY

ART UNIT	PAPER NUMBER
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2123

DATE MAILED: 03/04/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application N .

09/544,390

Applicant(s)

HESS ET AL.

Examiner

Kandasamy Thangavelu

Art Unit

2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 19-23,33,34 and 36-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 36-41 is/are allowed.
- 6) ☒ Claim(s) 19,33 and 34 is/are rejected.
- 7) ☒ Claim(s) 20-23 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 April 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Pri rity under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This communication is in response to the Applicants' Response mailed on November 25, 2003. Claims 19-23 were amended. Claims 1-18, 24-32 and 35 were cancelled. Claims 36-41 were added. Claims 19-23, 33, 34 and 36-41 of the application are pending. This office action is made non-final.

Response to Arguments

2. Applicants' amendments filed on November 25, 2003 have been fully considered. The applicants did not argue previous rejections and made nonsubstantive amendments to claims 19-23. Additional claim rejections under 35 USC 102 (b) are included in this office action for claims 19, 33 and 34 using the previously used references. The examiner regrets the error made and the inconveniences to the applicants.

Drawings

3. The drawings are objected to; see a copy of Form PTO-948 sent with paper No. 3 for an explanation. Applicants are requested to send corrected drawings in response to this Office action.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 19, 33 and 34 are rejected under 35 U.S.C. 102(b) as being anticipated by **Berkowitz et al. (BE)** (U.S. Patent 5,488,561).

5.1 **BE** teaches multivariable process control method and apparatus. Specifically, as per Claim 19, **BE** teaches a method for controlling a process (CL1, L13-14; CL1, L17-19); comprising:

converting at least one submodel of a nonlinear model having two or more submodels to a linear model, each of the two or more submodels having a predetermined one of two or more model predictive controllers associated therewith, the linear model for operating the associated one of the two or more controllers (CL3, L37-39; Fig. 3, Blk 70; CL7, L56-60; CL8, L15-29; CL10, L18-20; CL11, L26-29);

using the nonlinear model in a real time optimizer to compute targets for all of the two or more model predictive controllers, a predetermined subset of the computed targets associated with a respective one of the two or more controllers (CL1, L25-28; CL1, L52-54; CL1, L67 to CL2, L3; CL3, L4-10; CL3, L18-20; CL6, L45-48; CL7, L40-44);

Art Unit: 2123

passing each of the predetermined subsets of the computed targets associated with a respective one of the two or more model predictive controllers to the associated one of the two or more controllers (CL1, L54-58; CL3, L21-22; CL3, L29-30; CL 7, L31-35; CL8, L57-60); and passing the linear model to the associated one of the two or more controllers (CL 7, L56-60; CL8, L15-29).

5.2 As per Claim 33, **BE** teaches an apparatus for controlling a process having process measurement variables associated therewith (CL1, L13-14; CL1, L17-19; Fig. 2 and Fig 3); the apparatus comprising:

a digital processor (CL6, L21-23);

two or more model predictive controllers each having an associated submodel of a linear model having two or more submodels for the process therein (CL1, L25-28; CL7, L56-60); and

a simulation environment routine having the nonlinear model therein, the simulation environment routine executed by the digital processor (Fig. 2; CL3, L53-56; CL7, L15-20; CL3, L3-7); for:

converting at least one submodel of a nonlinear model having two or more submodels to the associated linear submodel (CL3, L37-39; Fig. 3, Blk 70; CL7, L56-60; CL8, L15-29; CL10, L18-20; CL11, L26-29);

using the nonlinear model in a real time optimizer to compute targets for all of the two or more model predictive controllers, a predetermined subset of the computed targets associated with a respective one of the two or more model predictive controllers (CL1, L25-28; CL1, L52-54; CL1, L67 to CL2, L3; CL3, L4-10; CL3, L18-20; CL6, L45-48; CL7, L40-44);

Art Unit: 2123

passing each of the predetermined subsets of the computed targets associated with a respective one of the two or more model predictive controllers to the associated one of the two or more controllers (CL1, L54-58; CL3, L21-22; CL3, L29-30; CL 7, L31-35; CL8, L57-60); and

passing the linear model to the associated one of the two or more controllers (CL 7, L56-60; CL8, L15-29).

5.3 As per Claim 34, **BE** teaches apparatus of Claim 33. **BE** teaches the apparatus further comprising a regulatory control system for controlling the process according to the predetermined subsets of the computed targets passed to the associated one of the two or more controllers (Fig. 2; CL6, L9-20).

Allowable Subject Matter

6. Claims 20-23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. Claims 36-41 are allowed.

Conclusion

Art Unit: 2123

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kandasamy Thangavelu whose telephone number is 703-305-0043. The examiner can normally be reached on Monday through Friday from 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Teska, can be reached on (703) 305-9704. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-9600.

K. Thangavelu
Art Unit 2123
February 27, 2004



SAMUEL BRODA, ESQ.
PRIMARY EXAMINER